

Objective Crew Served Weapon: Lethality for the 21st Century

Presented by
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Special Operations / Low Intensity Conflict (SO / LIC)
Symposium
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Arlington, Virginia

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GENERAL DYNAMICS ARMAMENT SYSTEMS

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Objective Crew Served Weapon - OCSW



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GENERAL DYNAMICS ARMAMENT SYSTEMS

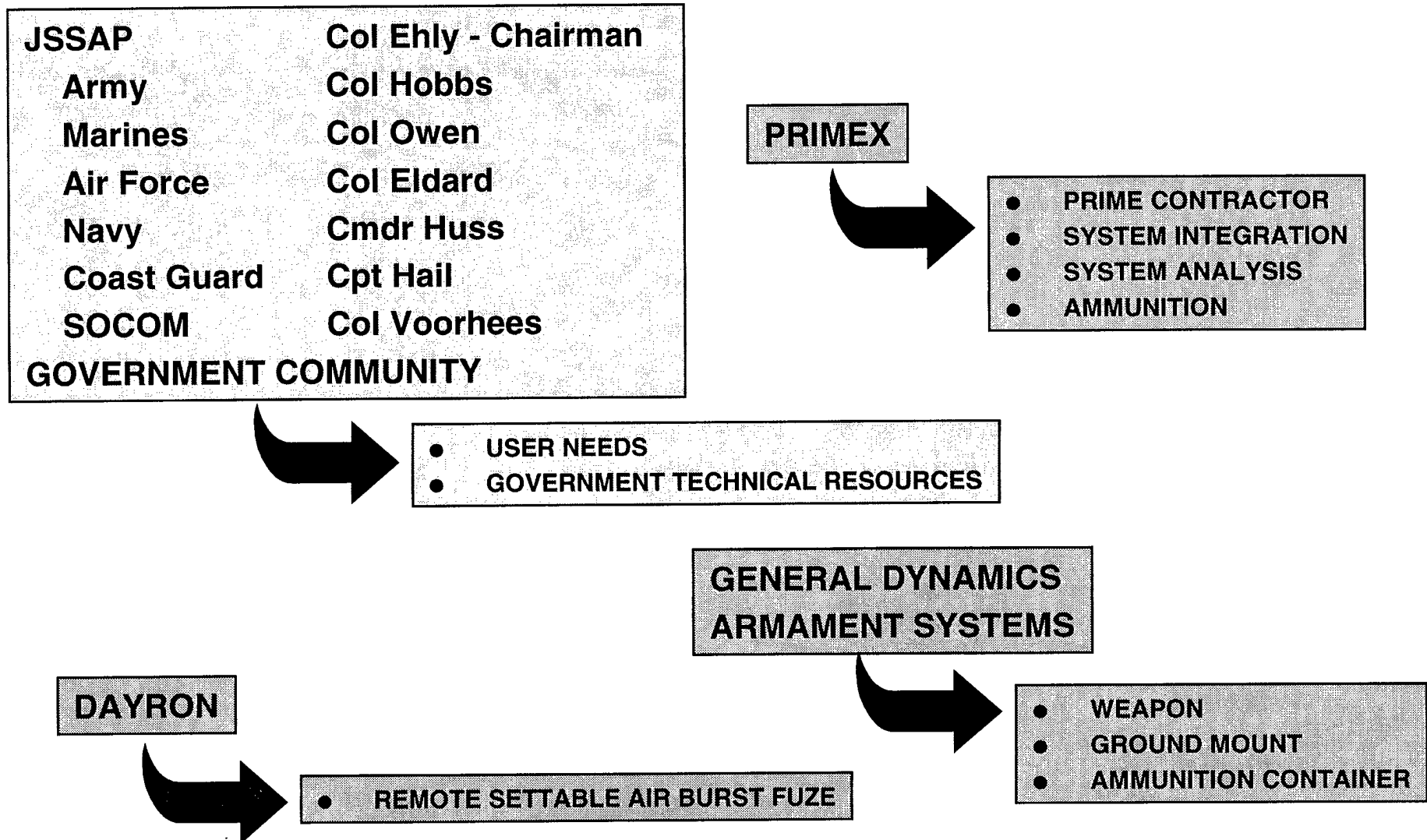
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OCSW PROGRAM OBJECTIVES

- Define, Develop and Demonstrate a Lightweight, Two-Man Portable, Ground Mounted Crew Served Weapon System That Provides:
 - High Probability of Incapacitation and Suppression to 2,000 Meters Against Protected Personnel.
 - High Potential to Defeat Materiel Targets and Light and Lightly Armored Vehicles out to 2,000 Meters.
- System Design is Driven to Provide The User With Maximum Effectiveness At Minimum Weight
- Adaptations to the Vehicle Armament Role

The OCSW Team



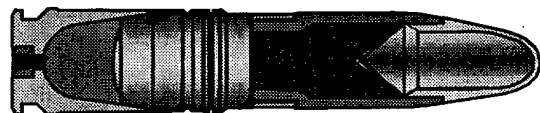
OCSW System Baseline

FULL SOLUTION FIRE CONTROL: DERIVED FROM OICW

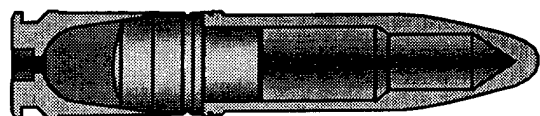
Caliber:	25mm
Cartridge Weight:	0.368 lb (167 grams)
Projectile Weight:	0.291 lb (132 grams)
Impulse:	13.4 lb-sec
Chamber Pressure:	40,000 psi
Muzzle Velocity:	1393 ft/sec
Maximum Effective Range	2,000 m
Time of Flight to 2,000 m	8.9 sec
Maximum Range	3,600 m



HE



AP



TP

SYSTEM WEIGHT UNLOADED: (36.6 lb)

GUN WEIGHT 23.0 lb

MOUNT WEIGHT 9.0 lb

FIRE CONTROL WEIGHT 4.6 lb

ROUNDS AVAILABLE IN TRANSPORT MODULES

Two 35.0 POUND MODULES 74 ROUNDS

Three 35.0 POUND MODULES 151 ROUNDS

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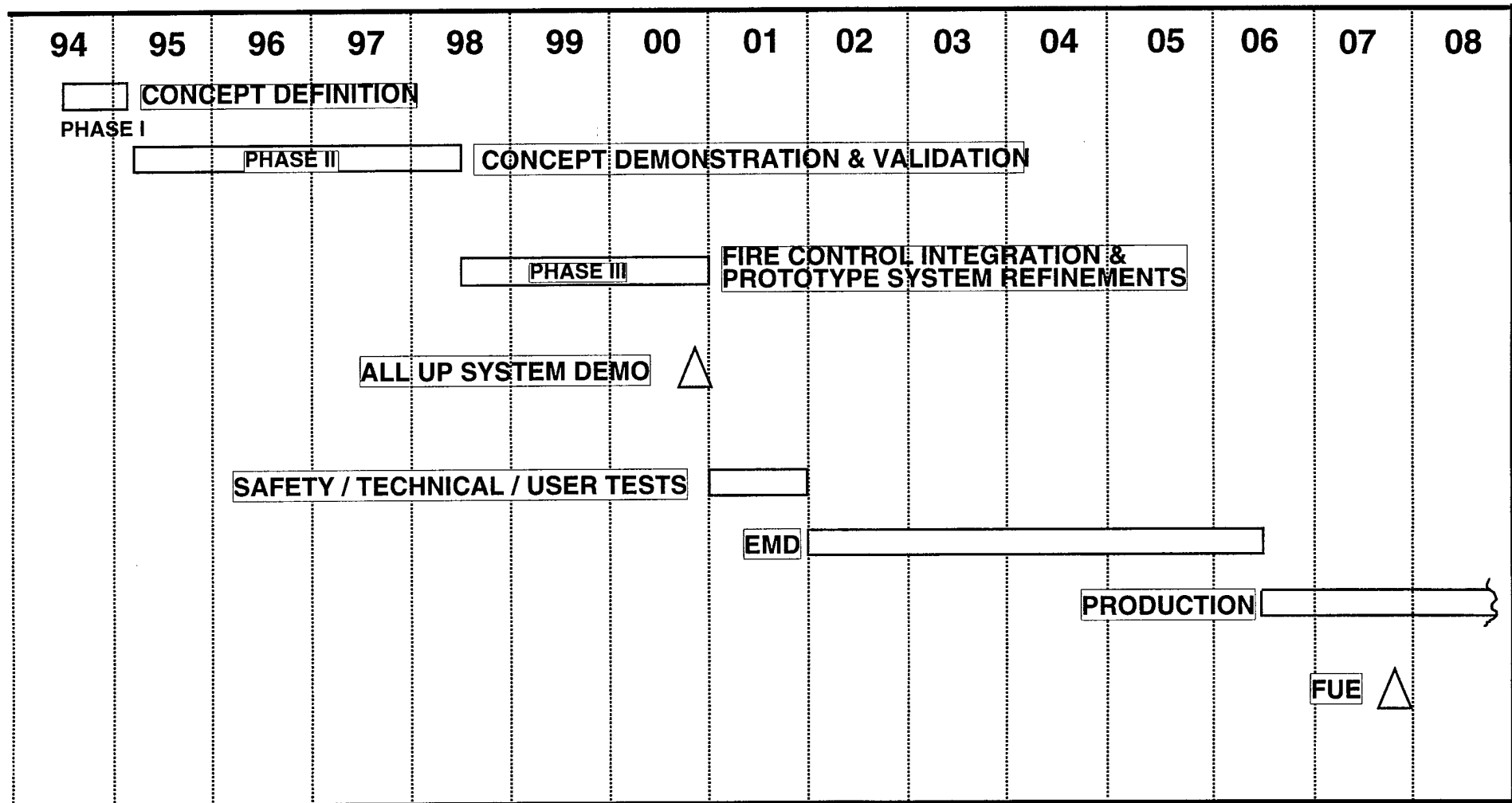
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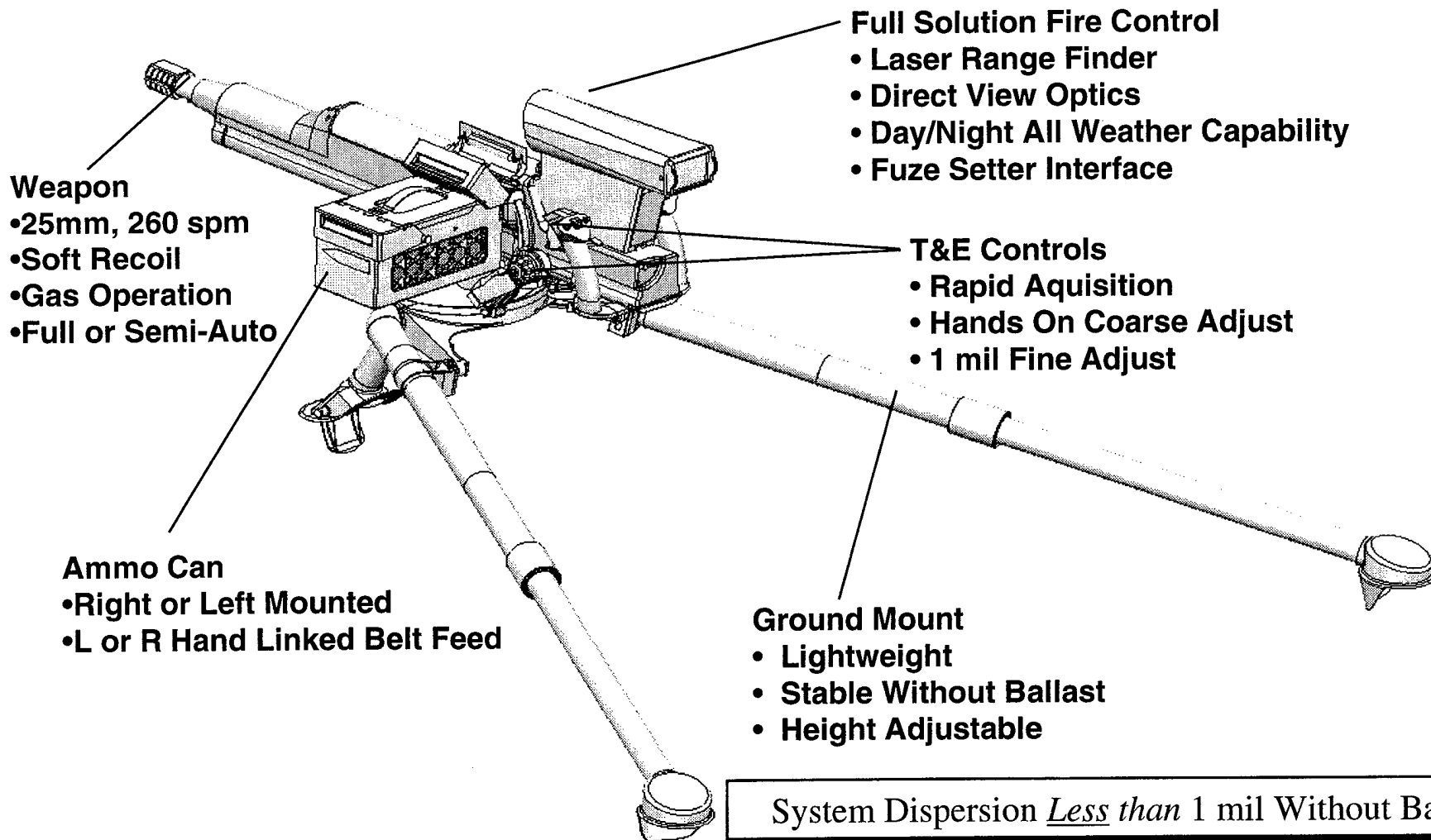
OCSW Schedule Overview Update



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OCSW Weapon

Ground Mount Configuration



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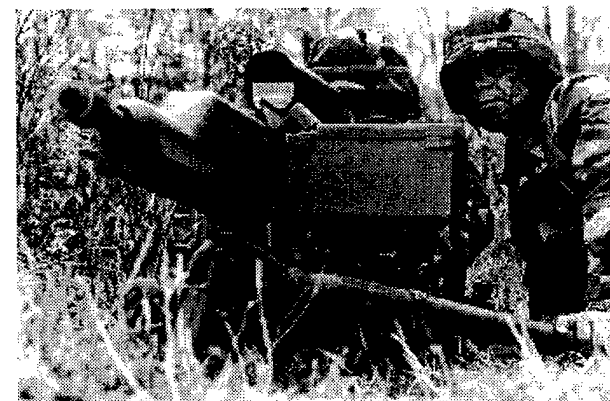
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The Light Infantry Weapon

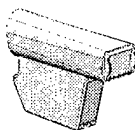


Easily Deployed
By A Crew Of Two

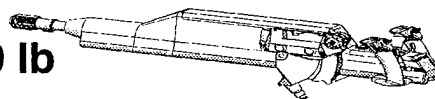


Transport Modules

Fire Control 4.6 lb



Weapon, Pintle 26.0 lb



Module A: 30.6 lb



Tripod Less Pintle 6.0 lb

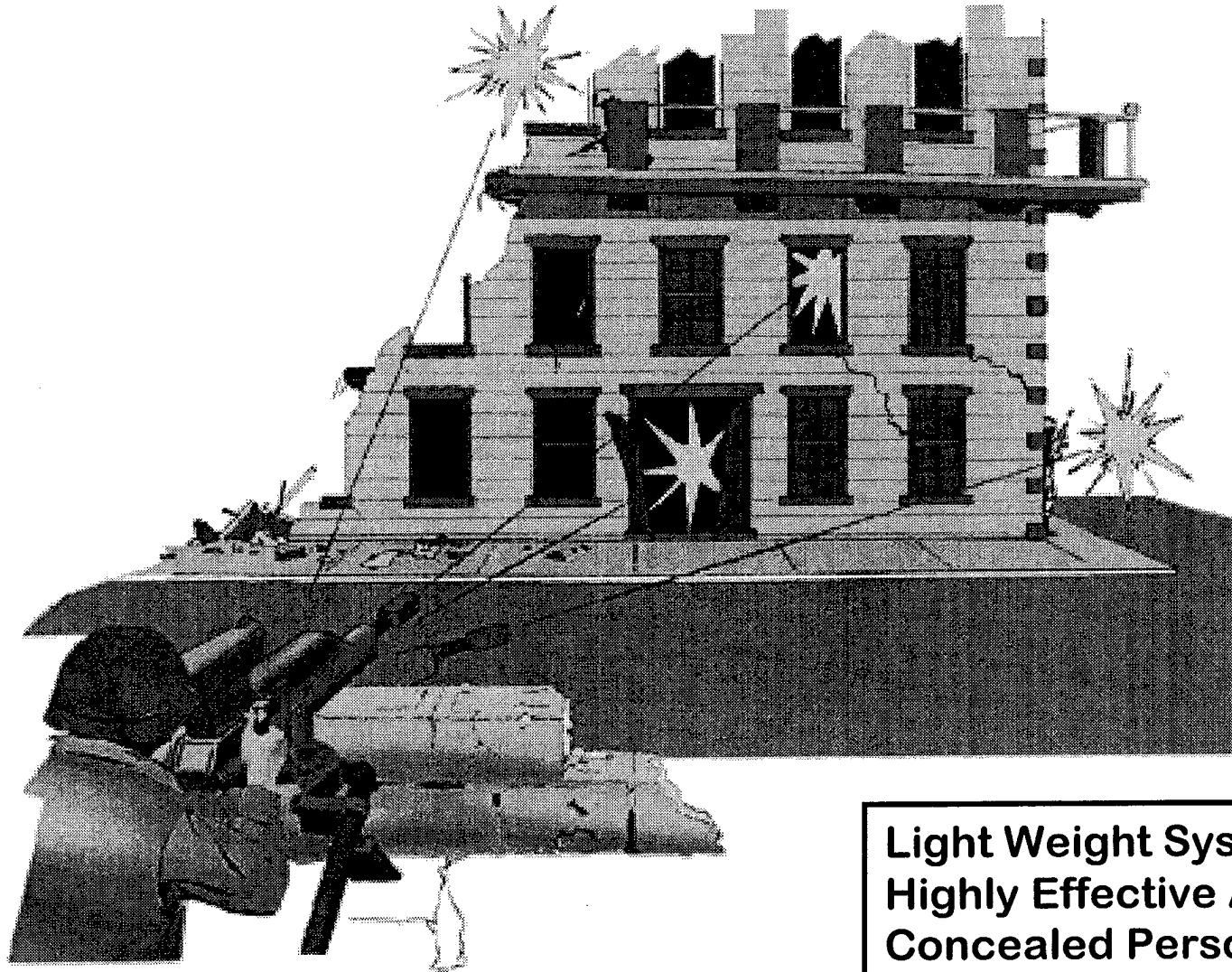
Ammo Boxes

2 @ 14 lb ea = 28 lb



Module B: 34.0 lb

OCSW in MOUT Environment



Light Weight System
Highly Effective Against
Concealed Personnel

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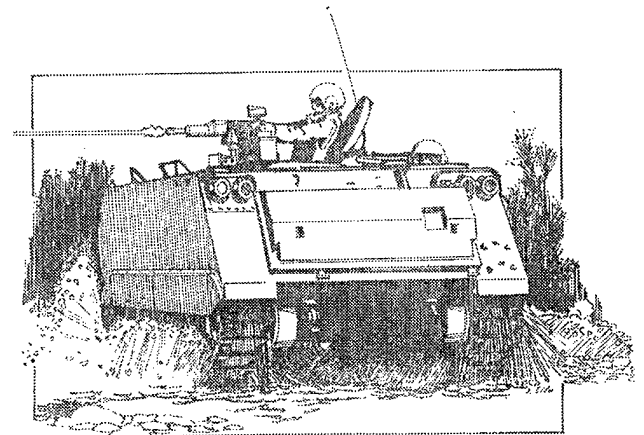
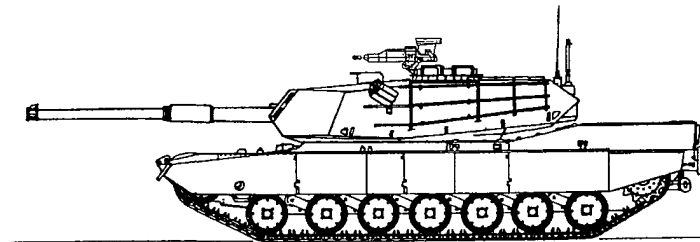
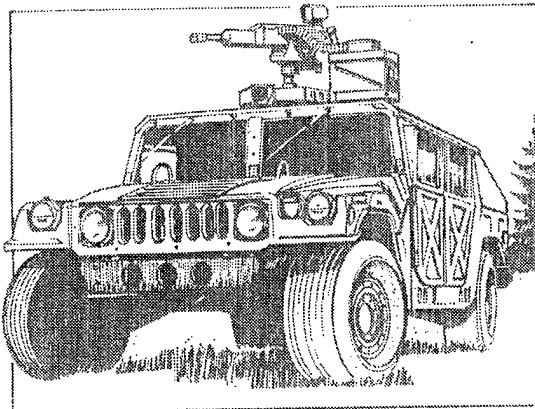
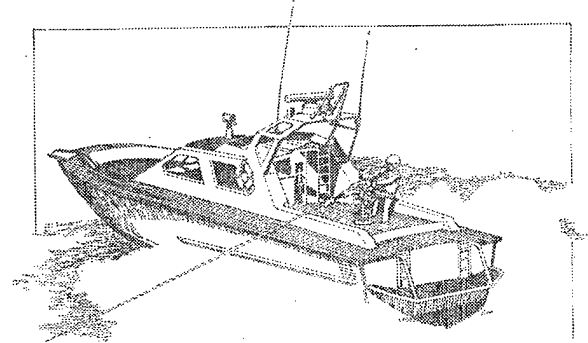
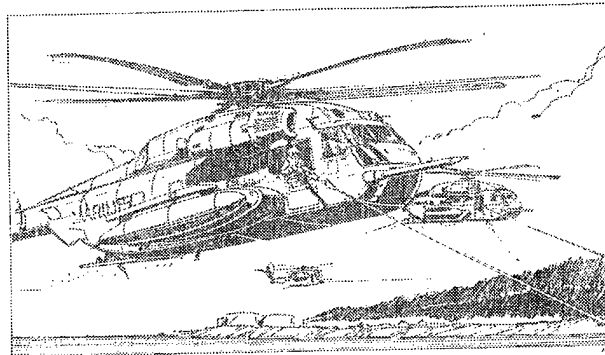
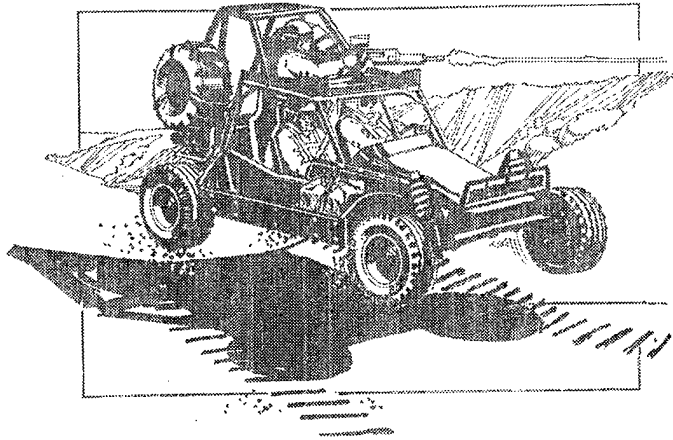
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OCSW Vehicle Applications

The OCSW Can be Easily Adapted as Primary / Secondary Armament on a Wide Variety of Vehicles and Water Craft, and May Be Quickly Dismounted for Perimeter Defense



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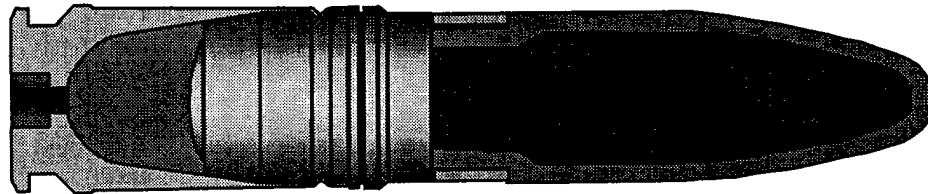
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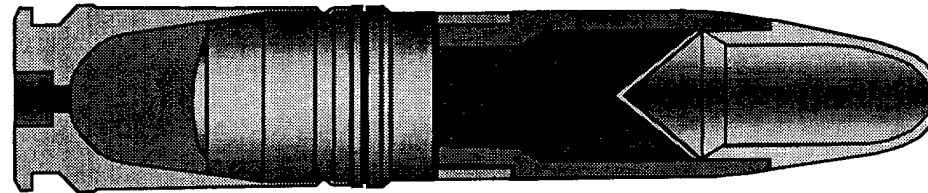


OCSW Ballistically Matched 25mm Ammunition Family

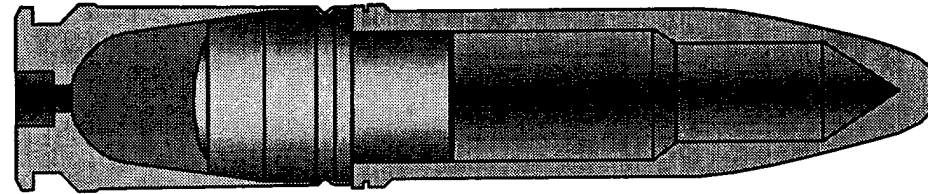
HE Cartridge



AP Cartridge



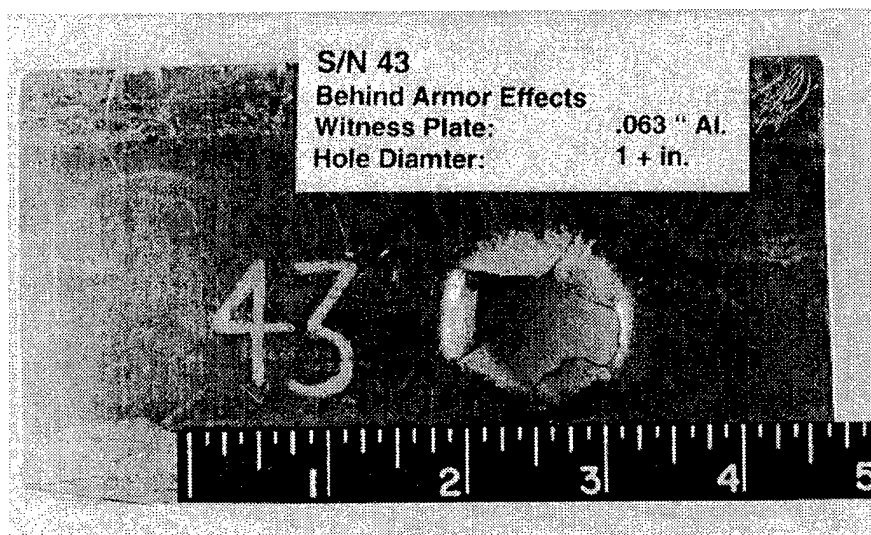
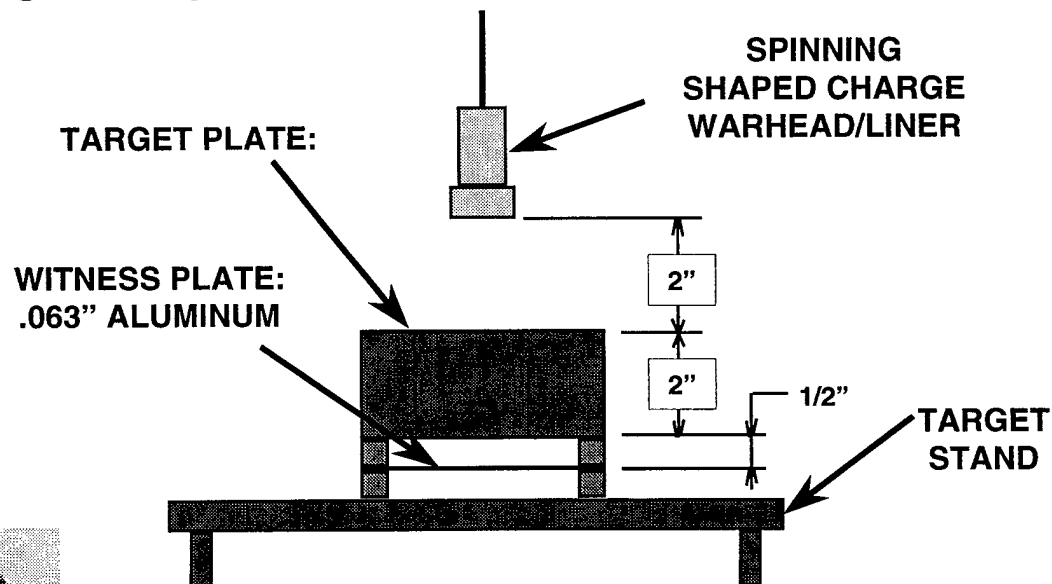
TP Cartridge



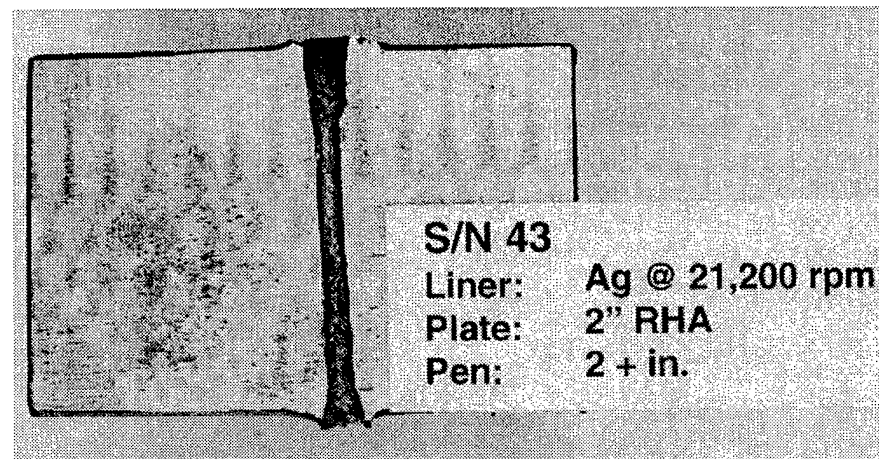
- Prescored Steel Warhead
 - LX-14 High Explosive
 - Defeats PASGT Vest & Helmet
 - Aluminum Cartridge Case
 - Standard Ball Propellant
 - Standard Percussion Primer
-
- Defeats 51mm RHA
 - Defeat 51mm HHA (Goal)
-
- Two-Piece Projectile
 - Integral Rotating Band

AP Warhead Performance

- Wide Angle, Shallow Cone, Shaped Charge Liner Consistently Penetrates 2.0 inch RHA with Sizable Hole in Witness Plate
- 15 gram LX-14 Explosive
- 2.0 inch Standoff
- 21,000 - 28,000 RPM Spin



Behind Armor Witness Plate



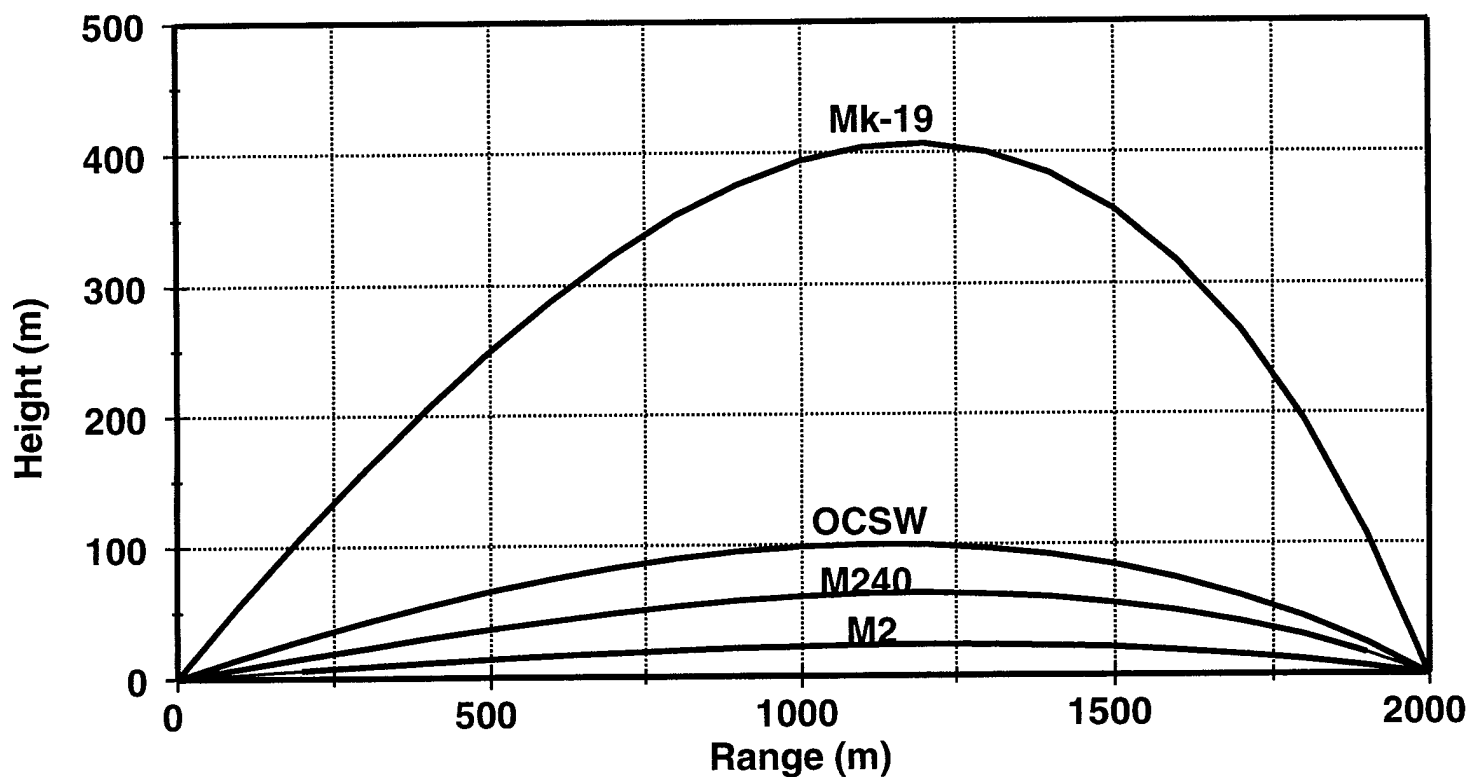
Target Plate

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OCSW Fuze Features

- Remote Settable Electronic Time Fuze
- Independent Point Detonating Backup with Super Quick or Delay Options
- Independent Self-Destruct
- Precision Air Burst Function Compensates for Muzzle Velocity Variation
- Fuze Powered and Set in Feed System
- Fuze Re-Set Each Time a Target is Lased
- Mechanical Escapement Safe and Arm

Ammunition Trajectory Comparisons

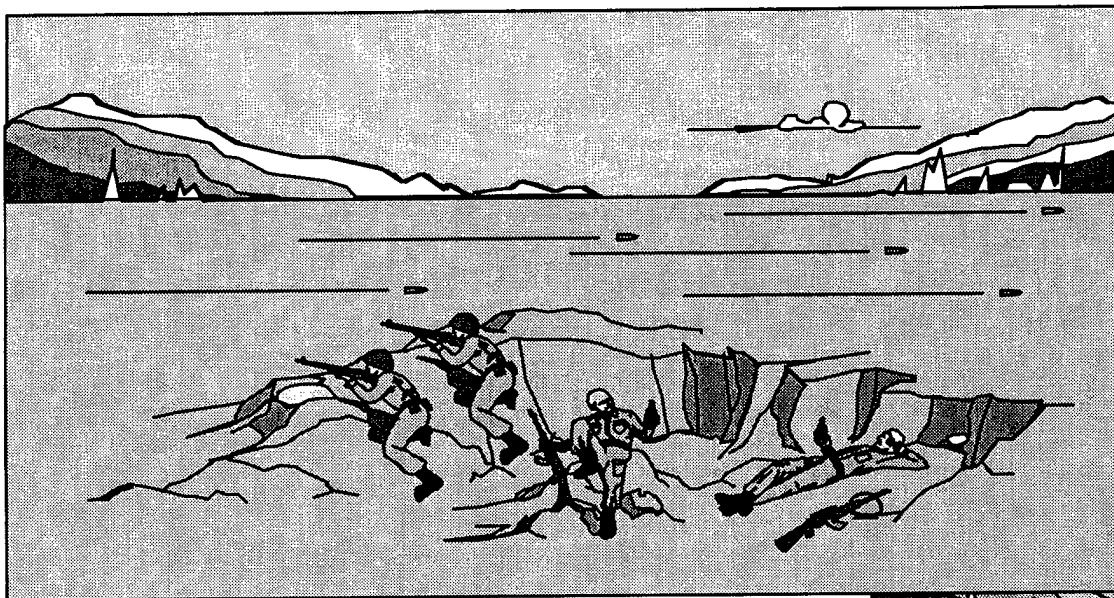


OCSW Provides the User With
Increased Stand-Off Lethality
and Reduced Engagement Time

TOF (sec)	500m	1000m	1500m	2000m
OCSW	1.55	3.55	5.97	8.89
M2	0.62	1.47	2.65	4.24
Mk-19	2.78	6.49	11.39	17.99
M240	0.77	2.19	4.18	6.68

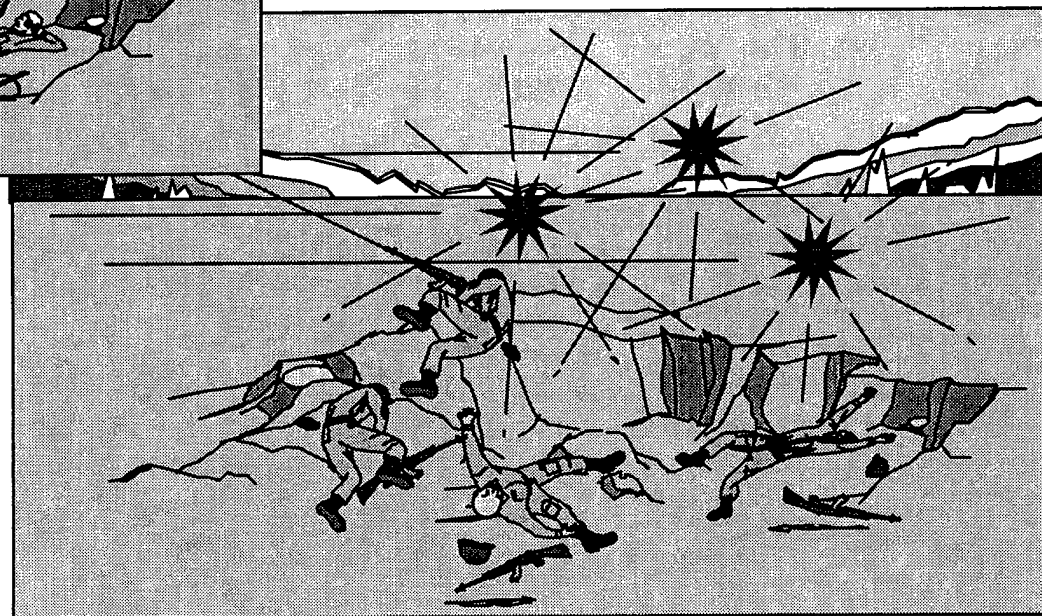
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There Is No Hiding From Air Bursting Munitions



KE Ammunition Can
Only Suppress
Personnel In Defilade

Air Burst Ammunition Kills



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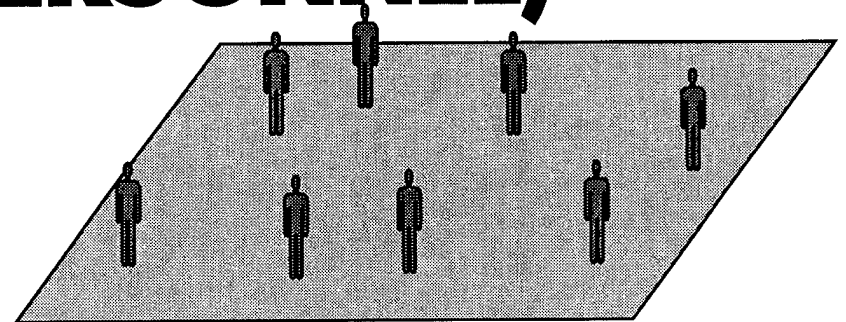
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TARGET (ANTI-PERSONNEL)

■ Target (50m x 10m area)

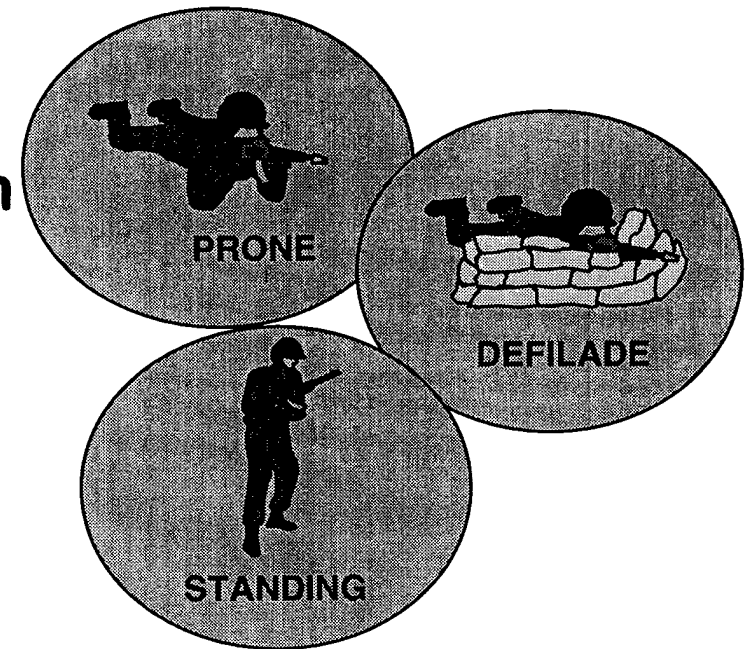
- 8 man squad
- Standing / Prone / Prone-Defilade



■ Range of Engagement

- 0 to 2000 m
- Effectiveness Computed at 200m Increments

■ Effectiveness Analysis Conducted Using AMSAA Models (CASRED, FBAR, LITTON)



System Comparisons

System	40mm Mk 19 Mod 3	Cal .50 M2HB	7.62mm M240	25mm OCSW
Weapon Weight (lb)	75.6	84.0	24.2	23.0
Mount Weight (lb)	65.4	46.1	19.2	9.0
Fire Control (lb)	N/A	N/A	N/A	4.6 (est)
Unloaded System Weight (lb)	141.0	130.1	43.4	36.6
Ammunition Weight (lb / Round)	1.24	.38	.10	.45

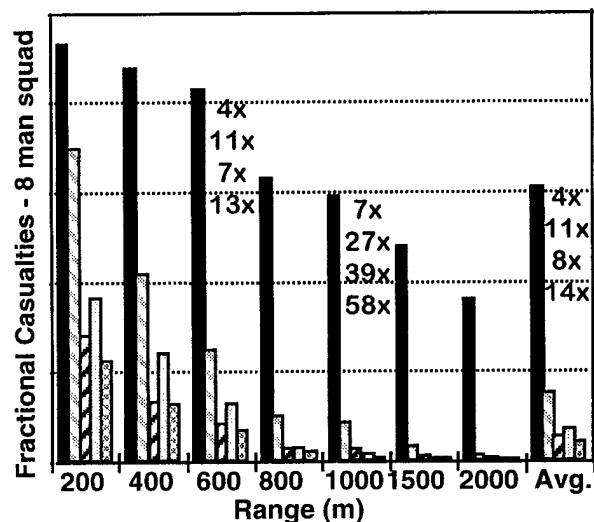
Ammunition Load

Lbs Ammo / Kill	111	117	25	3
Lbs Ammo / 60 sec Suppression	157	133	28	12

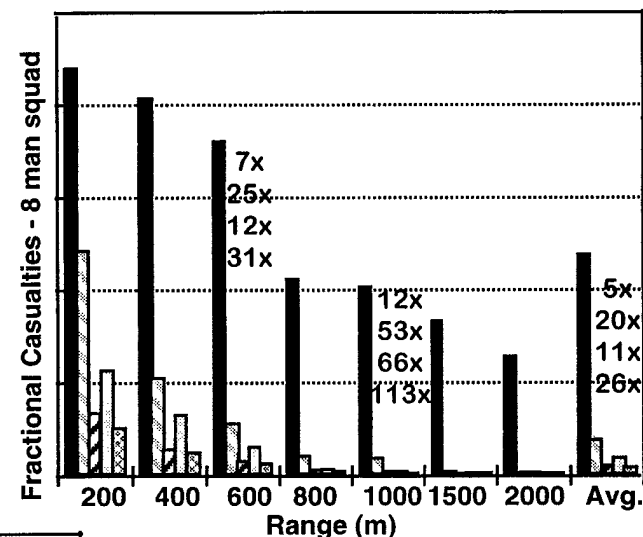
A Lightweight System with Airburst Munitions is Key
to OCSW Effectiveness

Baseline Fractional Casualties for All Systems

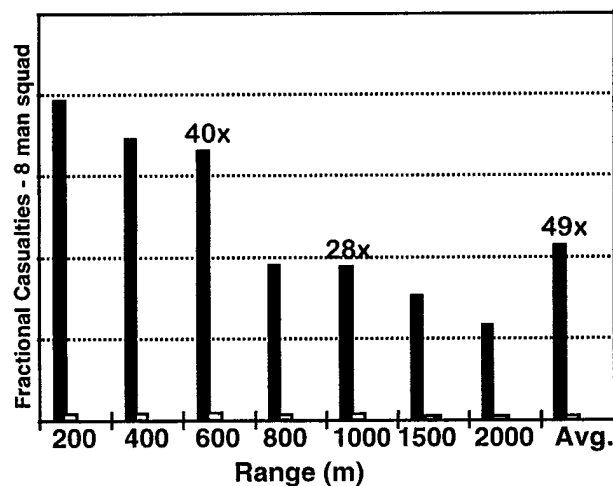
Standing - T1



Prone - T2



Defilade T3



All scenarios are using:
eight 3rd bursts at each range.
30 sec Assault Casualty Criteria.
personnel in winter clothing
with PASGT vest and helmet.

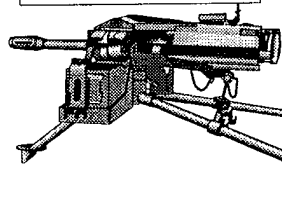
OCSW Payoff - Anti-Personnel Role

(Typical Marine Infantry Battalion)

30 Day Supply (Rds)

M8	21,060
M430	13,740
M80	60,720
Total	95,520

10 Each Mk19



Kills

M8	69
M430	154
M80	256
Total	479

Ammo Weight

M8	8,098
M430	17,032
M80	6,264
Total	31,394 lb.

Ammo Cube (Volume)

M8	111
M430	309
M80	105
Total	525 cu.ft.

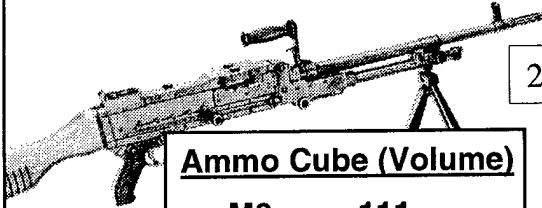


6 Each M2

Ammo Cost

M8	\$ 42,120
M430	219,840
M80	33,396
Total	\$295,356

23 Each M240

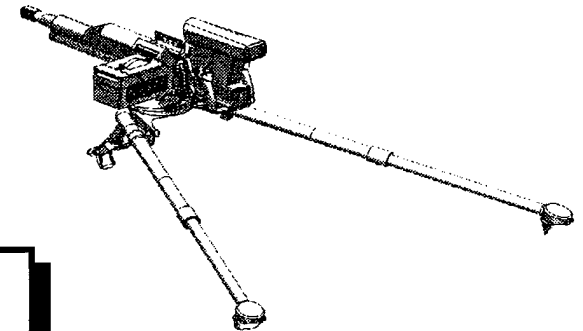


39 Weapons = 3,188 Pounds
39 OCSWS = 1,427 Pounds

OCSW

Comparisons

Rounds	3,170	30x less
Kills	479	same
Ammo Cube	54	9.7x less
Ammo Weight	1,429	22x less
Ammo Cost	\$69,428	4.25x less



**Substantially Less Weight and Volume to Get to the Conflict
With a Significant Improvement in Cost Effectiveness**

OCSW Deployment (Typical Marine Infantry Battalion)

3 Truckloads (5-Ton) / 3 Drivers

Logistics

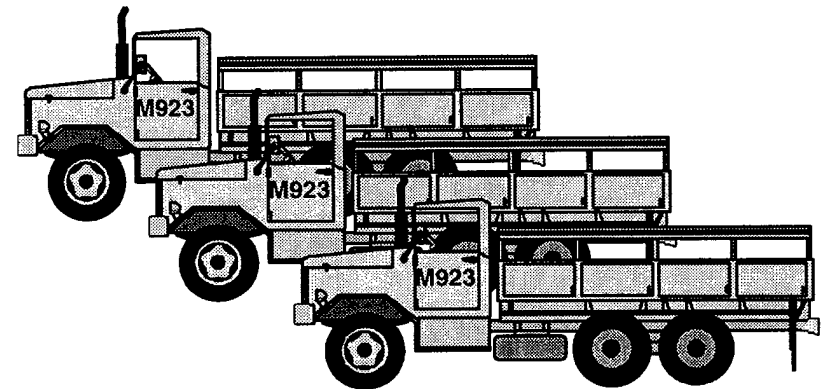
- **Conventional Ammo**

Weight = 31,394 lbs.

9.6 Pallets / 700 Boxes

Avg. Box Wt. = 45 lbs.

Ammo Cost = \$295,356



- **Equivalent OCSW Ammo**

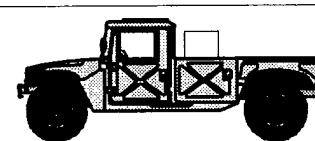
Weight = 1,431 lbs.

1.2 Pallets / 103 Boxes

Avg. Box Wt. = 14 lbs.

Ammo Cost = \$69,428

1 Truckload / 1 Driver



HMMWV

OCSW Allows Significant Reductions in
Logistic Support and Equipment

OCSW Payoff

Current Battalion Ammunition

30 Day Supply (Rds)

M8	21,060
M430	13,740
M80	<u>60,720</u>
Total	95,520

Kills

69
154
<u>256</u>
479

Ammo Cost

\$ 42,120
219,840
<u>33,396</u>
\$295,356

OCSW Equivalent

3,170 Rds

479 Kills

\$69,428

**30 DAY
SAVINGS**
\$225,928

OCSW Provides Equal Effectiveness at 1/4 the Cost